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Three new species of *Goniurellia* Hendel from Sokotra Island (Yemen) and Oman, and comments on *Tephritis cosmia* Schiner (Diptera, Tephritidae)

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Three new species of *Goniurellia* Hendel from Sokotra Island (Yemen) and Oman and comments on the status of *Tephritis cosmia* Schiner (Diptera, Tephritidae). - Three new species of *Goniurellia* Hendel, *G. apicalis* sp. n. from Sokotra Island (Yemen), *G. ebejeri* sp. n. and *G. octoradiata* sp. n. from Oman, are described, illustrated and compared with similar species, raising the number of species of the genus to ten. Based on a study of the lectotype of *Tephritis cosmia* Schiner (a species superficially similar to some *Goniurellia* species), this species is retained in *Trupanea* Schrank.

Key-words: Tephritidae - *Goniurellia* - new species - Sokotra island - Oman - *Tephritis cosmia*.

INTRODUCTION

Goniurellia Hendel, 1927, is a small genus of seven described species from the southern Palaearctic, Afrotropical, and Oriental regions (Norrbom *et al.*, 1998). The center of distribution is situated in the desert regions of the Near East, and not less than five species are known from Israel (Freidberg & Kugler, 1989). The species with known biology live in flowerheads of species of *Inula*, *Pallenis* and *Pulicaria*, three genera of the tribe Inuleae (Asteraceae) (Freidberg, 1980; Merz, personal observations) without causing galls.

Hendel (1927) erected the subgenus *Goniurellia* for five species of *Trupanea* Schrank with a long proboscis, but he misidentified the type species. A new type species (*Urellia augur tridens* Hendel, 1910) was proposed by Freidberg & Kugler (1977) and approved by the ICZN (1982). The taxon was given generic rank by Freidberg (1980) who revised the genus. The monophyly of the genus was supported by the cladistic study of Merz (2000). Within the *Tephritis* group of genera, *Goniurellia* may be recognized by the presence of a medial postocellar seta, basal scutellar setae only, and capitate proboscis. The terminalia of the males are characterized by a very elongate vesica and a small basal sclerotization of the glans which carries two to three tooth-like projections apically.

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While studying a small collection of Tephritidae from the island of Sokotra and some spcimens from Oman I found that these populations represent three species new to science. They are described below. In order to clarify the status of *Tephritis cosmia* Schiner, 1868, a species superficially similar to some *Goniurellia*, its type material has been studied.

The material is deposited in the following institutions: Muséum d'histoire naturelle, Genève (MHNG), National Museums & Galleries of Wales, Cardiff (NMW), Staatliches Museum für Naturkunde, Stuttgart (SMNS), Tel Aviv University (TAU) and the private collections of M. Bartak, Praha, Czech Republic (CMB) and M. Ebejer, Balzan, Malta (CME).

The terminology follows White *et al.* (2000), except for terminology of antennae which follows Stuckenberg (1999). Labels of primary types are cited verbatim. The text of each individual label is put in quotation marks, the different lines of one label are separated by slashes.

TAXONOMIC TREATMENT

Goniurellia apicalis sp. n. Figs 1-9

Urellia cosmia Schiner var.: Becker, 1910: 156.

Material

Holotype ♂, **[Yemen]** "Sokotra, Ayhaft / cca 13°N, 54°E / 15.III.2000 / Št'astný K. and Bejček V.", "Holotypus", "*Goniurellia* / *apicalis* sp. n. / det. B. Merz 2002" (MHNG). The holotype is laterally glued on a card point and is in good condition (left anterior orbital seta, left medial vertical seta and left anterior interalar seta absent).

Paratypes: 2♂♂, 1♀, same data as holotype; 2♂♂, 3♀♀, "Sokotra, Noghed / cca. 13°N, 54°E / 27.II.-I.III.2000 / Št'astný K. and Bejček V". (CMB, MHNG, TAU).

Etymology

The name reflects the presence of a pattern on the apical half of the wing only.

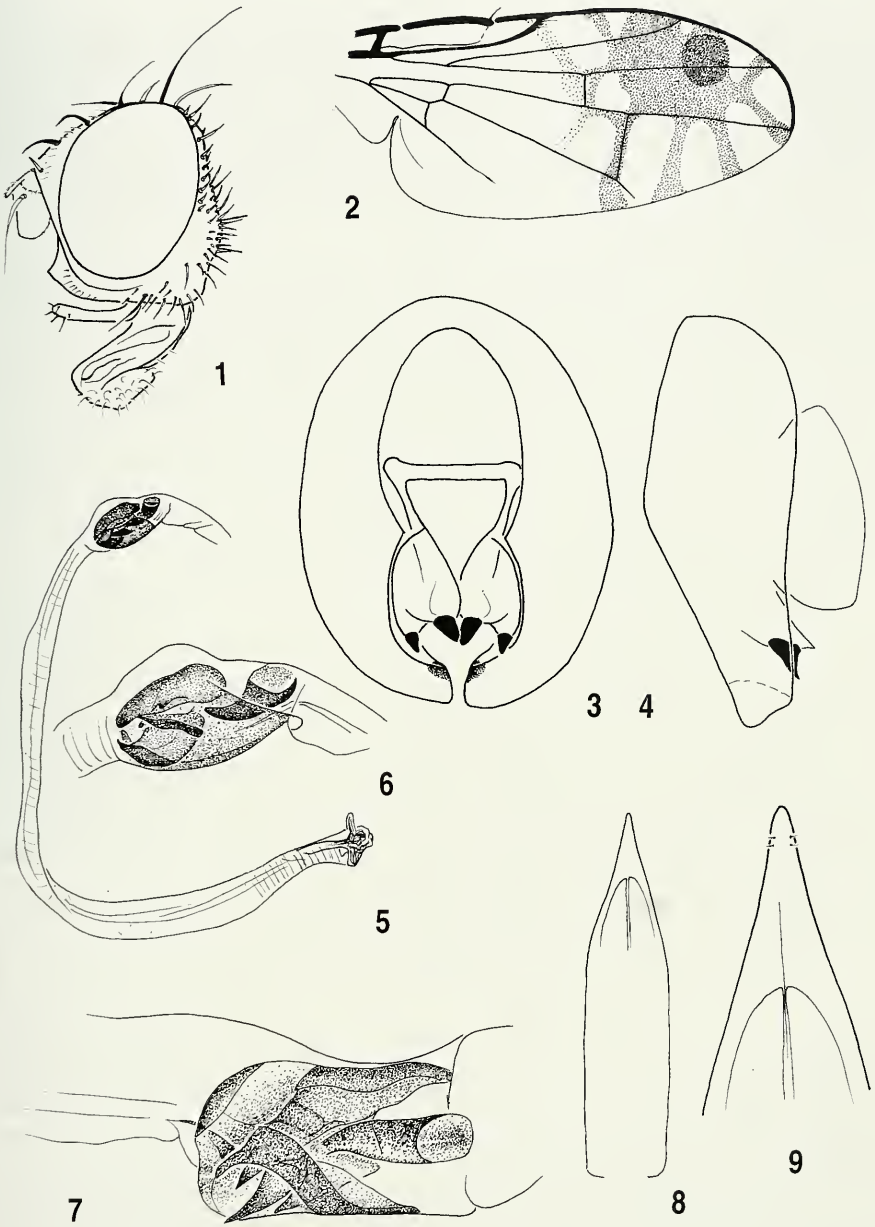
Diagnosis

The species may be recognized by its wing pattern (Fig. 2) with the well-developed apical spot from which eight narrow rays emerge, of which the ray from R-M to the tip of R_1 is faint and narrow. It is separated from *G. octoradiata* sp. n. by the larger bulla, the presence of a yellow-brown to brown spot over br along R-M, and by the relative length of the 3 toothlike projections of the glans (Fig. 7).

Description

Wing length. ♂ 1.95-2.40 mm; ♀ 2.15-2.45 mm.

Head (Fig. 1). In profile only slightly higher than wide (height:width ratio about 1.25-1.35:1); gena low, about one sixth as high as compound eye; frons from lunule to posterior margin of posterior ocelli about as long as maximum distance between compound eyes; fronto-facial angle slightly larger than 90°; general colour mat yellow, only ocellar triangle and butterfly-shaped spot in middle of occiput above occipital foramen grey microtrichose; frontal and orbital plates slightly silvery microtrichose; frons with few fine, whitish, acuminate setulae just posterior of lunule; scape whitish setulose anteriorly; pedicel with black setulae; postpedicel about 1.5 times as long as



FIGS 1-9

Goniurellia apicalis sp. n.: 1, head, lateral view; 2, wing; 3, ♂, epandrium and surstyli, caudal view; 4, ♂ epandrium and surstylus, lateral view; 5, ♂, phallus; 6, ♂, details of base of glans, lateral view; 7, ♂, details of base of glans, ventral view; 8, ♀ aculeus, ventral view; 9, ♀, tip of aculeus, ventral view.

wide; arista virtually bare, yellow in basal thickened part, dark brown distally; palpus apically with few black spinose setulae; proboscis capitate. Chaetotaxy: anteriormost frontal seta small, whitish lanceolate, posterior two frontal and anterior orbital seta dark brown, acuminate; posterior orbital seta shorter, white lanceolate; ocellar seta and medial vertical seta dark brown; all other setae and setulae on vertex and occiput whitish, lanceolate: one lateral vertical seta, one postocellar seta, one medial postocellar seta, and row of postocular setae; longest genal seta brown, all other genal and postgenal setulae whitish.

Thorax. Dorsum of scutum, scutellum, subscutellum, and major part of anepisternum, anepimeron, katepisternum, and meron bluish grey, densely microtrichose; postpronotum, notopleuron, anterior parts of pleura and prosternum mat yellow; scutum with 3 brown, narrow lines over dorsocentral setae and in middle; setulae on entire thorax whitish, lanceolate; prosternum and anepisternum setulose. Chaetotaxy: one dorsocentral seta almost on line of suture; scutellum only with basal scutellar seta; one prescutellar acrostichal seta; one presutural supraalar seta; one postsutural supraalar seta; one intraalar seta; one postalar seta; one postpronotal seta; two notopleural setae; one anepisternal seta; one anepimeral seta; one katepisternal seta; setae pale brown, only posterior notopleural and anepimeral seta whitish.

Legs. Yellow, without modifications.

Wing (Fig. 2). Veins bare, except R_1 dorsally setulose; "narrow stellate-pattern" (see Merz, 2000) with eight narrow rays emerging from dark-brown central area: one ray from R-M to pterostigma; one ray between two hyaline spots in r_1; two rays apically to tip of veins R_{4+5} and M, two rays in m, one ray over DM-Cu and one ray from R-M through dm; large hyaline spot present between R-M and prolongation of DM-Cu in r_{4+5}; br distally at least pale-brown, brown area also over R-M; conspicuous bulla posterodistal of small hyaline spot at tip of R_{2+3}. Variation: ray from R-M through dm sometimes reduced or only represented by isolated bar; ray from R-M to tip of pterostigma sometimes more yellowish than other rays.

Abdomen. Ground colour mat yellow, but dorsum of all tergites to a variable extent bluish grey microtrichose; setulae whitish lanceolate.

Male terminalia (Figs 3-7). Epandrium oval, tip of lateral surstylus with conspicuous black spot; medial surstylus very broad, with two subequal prensisetae; phallus with very short distiphallus barely longer than hypandrium, entirely bare; glans with small basal sclerotization, which includes in ventral view a sclerotized tube basally and three conspicuous small toothlike projections distally of which one tooth is distinctly longer; remaining sclerotization forming more or less regular sheath; vesica very long, parallel-sided, at least 15 times as long as wide.

Female terminalia (Figs 8-9). Oviscape orange brown, dorsally and ventrally on basal half with whitish lanceolate setulae, about as long as preceeding two tergites combined; aculeus evenly pointed at tip; aculeus length: 0.83 mm (1 specimen checked).

Biology

No hostplants are known for this species. The specimens were collected with Malaise traps (Bartak, pers. comm.)

AFFINITIES

This species undoubtly forms a monophyletic group with *G. octoradiata* sp. n. (see below). The differences between the two taxa are explained in detail under the latter species. They may be separated easily from the other species of *Goniurellia* by their wing pattern which is more developed than in *G. lacerata* (Becker) (see Freidberg & Kugler, 1989, plate IV, Fig. 2) but does not exhibit the broad basal area that covers the entire pterostigma (e. g. Fig. 11). Superficially, the two new species have a wing pattern similar to *Trupanea cosmia* (Schiner) (Fig. 28) although the latter has a small black spot on Cu_1 and the area around R-M is entirely hyaline (although R-M itself is faintly brown); moreover its oviscape is entirely black, the medial postocellar seta is absent and the male terminalia are as in other *Trupanea* (Fig. 30). The status of *Trupanea cosmia* is further discussed below. It is quite probable that Becker (1910) had specimens of *G. apicalis* before him when he reported *Urellia cosmia* var. from Sokotra. His comments on the morphology of the specimens correspond very well with the description of the new species. Unfortunately, the specimens studied by Becker could not be not found in the NHMW (Contreras-Lichtenberg, *in litt.*). The wing of *Trupanea richteri* Hering (Hering, 1956) is also similar, but the posterior hyaline spot in R_1 is evenly continuing to R_{4+5}. Moreover, the dorsocentral setae are distinctly posterior to the transverse suture, giving evidence that this species may be more closely related to species of *Euarestella* Hendel (a couple of paratypes from Iran, Beluchistan, deposited in SMNS, could be studied).

The structure of the sclerotized part of the glans is rather simple in *G. apicalis* and *G. octoradiata*. The strong, basal sclerotized hook is also present in *G. lacerata* and *G. omissa* Freidberg, but it is less developed in these species. *G. lacerata* shares with both new species the presence of 3 tooth-like projections apically of the sclerotized part of the glans which gives support that these three species form a monophyletic group. On the other hand, the shape of the epandrium and the presence of a black apico-dorsal spot on the lateral surstylus may indicate a relationship of the two new species with *G. munroi* Freidberg from Eastern and Southern Africa. Further studies are required to establish a well supported hypothesis for phylogenetic relationships of these taxa.

Goniurellia ebejeri sp. n. Figs 10-17

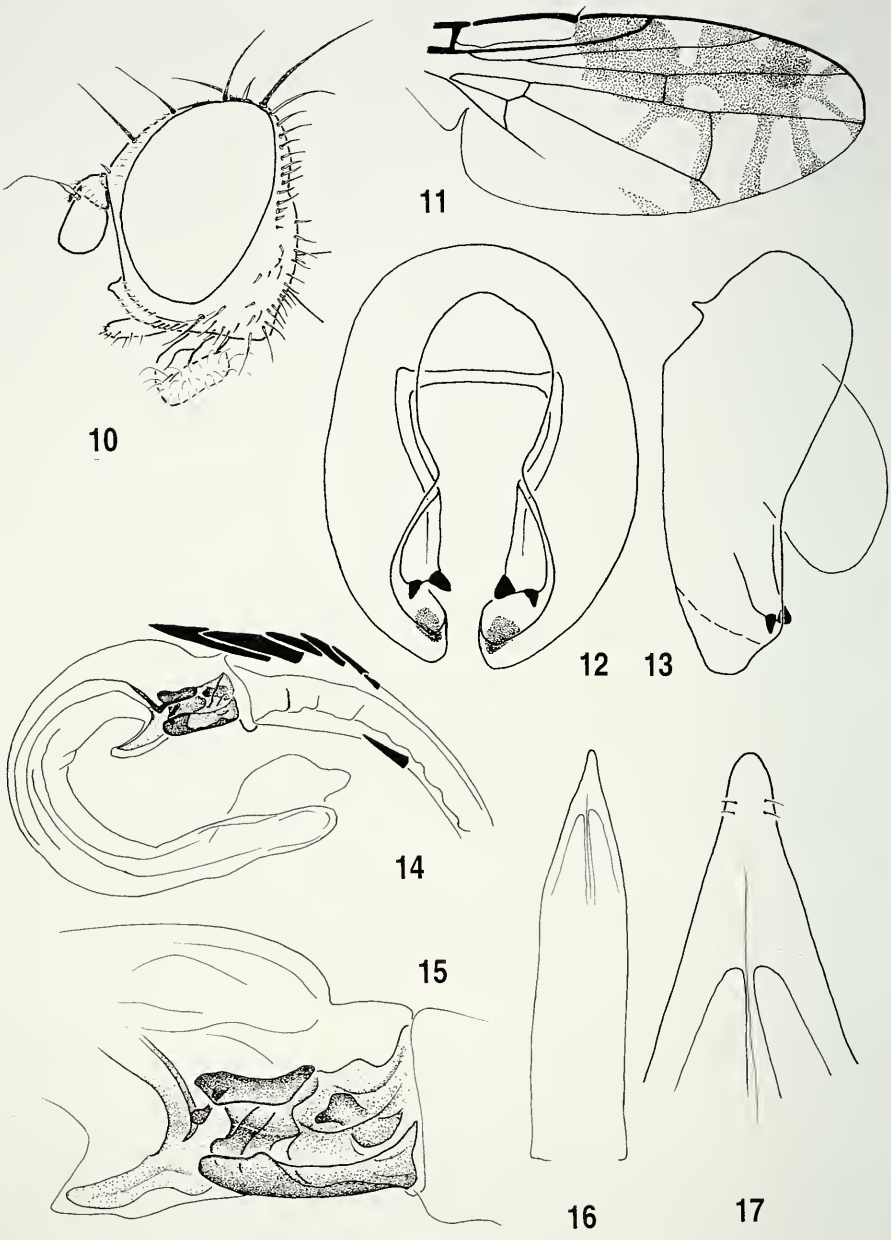
MATERIAL

Holotype ♂, "**Oman** Muscat / Al Ansab / 6.III.1989 / M. J. Ebejer", "Holotypus", "*Goniurellia / ebejeri* sp. n. / det. B. Merz 2002" (MHNG). The holotype is pinned laterally on a minuten pin on a polyporus strip and is in good condition (right arista, left anterior orbital seta, right anterior frontal seta, left dorsocentral seta absent; most of scutal setulae rubbed off).

Paratypes: 5♂♂, 1♀, same data as holotype (CME, MHNG, NMW, TAU); 1♀, same locality, but 23.II.1989, "*Goniurellia* ? *spinifera* Freidberg, det. M. J. Ebejer 1994" (MHNG); 2♂♂, 2♀♀, same locality, but 27.XII.1989 (NMW).

ETYMOLOGY

This pretty species is named in honour of the collector of the type series, Martin J. Ebejer.



FIGS 10-17

Goniurellia ebejeri sp. n.: 10, head, lateral view; 11, wing; 12, ♂, epandrium and surstyli, caudal view; 13, ♂, epandrium and surstylus, lateral view; 14, ♂, phallus; 15, ♂, details of base of glans, lateral view; 16, ♀, aculeus, ventral view; 17, ♀, tip of aculeus, ventral view.

Diagnosis

This species differs readily from all congeners by the generally symmetrical brown areas of the wing, separated by a single hyaline spot in r_1 (Fig. 11) and the presence of several strong setae on the preglans area of the phallus (Fig. 14).

Description

Wing length. ♂ 2.45-2.75 mm; ♀ 2.15-2.75 mm.

Head (Fig. 10). In profile distinctly higher than wide (height:width ratio 1.5:1); gena low, less than one sixth as high as compound eye in profile; frons from lunule to posterior margin of posterior ocelli slightly longer than maximum distance between compound eyes (ratio about 10:9); fronto-facial angle about 120°; colouration, antennae, and mouthparts as in *G. apicalis*. Chaetotaxy: as in *G. apicalis*, but acuminate setae (posterior two frontal setae, anterior orbital seta, ocellar seta, medial vertical seta) yellowish brown, only slightly darker than white, lanceolate setae.

Thorax. Uniformely yellow greyish microtrichose, but postpronotum and notopleuron with large yellow areas; scutum with two indistinct dark-gray, narrow, longitudinal stripes on line of dorsocentral setae. Chaetotaxy as in *G. apicalis*, but acuminate setae very pale brown, only indistinctly darker than lanceolate setae; dorsocentral seta almost on line of suture.

Legs. Uniformly yellow.

Wing (Fig. 11). Veins bare, except R_1 dorsally setulose; "elongate stellate-pattern" (see Merz, 2000) with 6 narrow rays emerging from dark center: two rays apically to tips of R_{4+5} and M; ray along R_{4+5} shorter than ray along M; two rays in m; one ray through DM-Cu; one ray from R-M through dm to Cu_1; broad dark band present over entire pterostigma to R-M; cell r_1 with one spot just posterior of pterostigma extending into r_{2+3}; R-M broadly surrounded by dark pattern; hyaline spot between R-M and prolongation of DM-Cu in r_{4+5} about half as wide as cell; cell cu_2 with brown stripe or small spot at margin in continuation of A_1+Cu_2; bulla rather weak.

Abdomen. Ground colour yellow, but most of dorsal surface except for posterior margin of tergites yellowish grey microtrichose.

Male terminalia (Figs 12-15). Epandrium oval; lateral surstylus dorsally with a broad plate with a rather large, black spot near apex; medial surstylus rather long, parallel sided; prensisetae subequal; phallus with very long distiphallus, on apical quarter with 6-7 dark-brown spines of increasing size on outer side and with 1-2 spines on inner side; glans long, with parallel sided vesica about 10 times as long as wide; basal sclerotization rather simple, forming tube, distally with a simple, weakly sclerotized fingerlike process.

Female terminalia (Figs 16-17). Oviscape orange brown, blackish brown at base and at apex; basal half dorsally covered by white, lanceolate setulae, otherwise fine brown setulose; oviscape about as long as preceeding 2.5 tergites combined; aculeus evenly rounded at tip, broader than in *G. apicalis*; aculeus length: 0.94 mm (1 specimen checked).

Biology

No hostplants are known for this species.

Affinities

The generic position of this species may be subject to some discussions. However, the capitate mouthparts, the chaetotaxy (2+1 frontal setae, medial posto- cellar setae present, dorsocentral seta almost on line with transverse suture, only basal scutellar seta present), and the shape of the glans (very elongated, parallel-sided vesica, small basal sclerotization which forms a tube with a distal tooth) are identical or very similar to most other species of *Goniurellia*, including its type, *G. tridens* (Hendel), and justify the placement of the species in this genus.

Within *Goniurellia* the new species can be separated from the other species by the wing pattern, the yellowish grey instead of bluish-grey microtrichose scutum, and the spines on the distiphallus. Whereas all known species with a broad brown area from the pterostigma to R-M ("elongate stellate-pattern") are characterized by a comma like basal hyaline spot in r_1, this spot has almost the shape of a regular triangle in *G. ebejeri*. Further, the only other *Goniurellia* with only one hyaline spot in r_1, *G. persignata* Freidberg, has an abbreviated ray through dm, but in the new species this ray reaches vein Cu_1. The presence of strong spines at the distal end of the distiphallus is a character found in some species of other genera (such as *Capitites* or *Tephritis*), but their structure and arrangement are different in these genera.

Based purely on the wing pattern, *G. ebejeri* may be confused with many species of the *Tephritis* group. In the Near and Middle East, the new species may compare with *Euarestella iphionae* (Efflatoun) but this species has an extensive dark pattern in the apical half of dm. Species of *Capitites* (*C. augur* (Frauenfeld) *C. ramulosa* (Loew)) with a similar wing pattern may be distinguished by the spatulate or geniculate mouthparts and the absence of medial postocellar setae.

Goniurellia octoradiata sp. n. Figs 18-26

Material

Holotype ♂, "**Oman**: Dhofar / Hagayf / 17°17'/54°03'E / 25.IX.1988", "M. J. Ebejer / Coll. NMW / Z. 1985-032", "Holotypus", "*Goniurellia / octoradiata* sp. n. / det. B. Merz 2002" (NMW). The holotype is glued to a card point and is in good condition (wings slightly broken, right anterior frontal seta, left anterior orbital seta, left postpronotal seta absent, left anterior notopleural seta and left interalar seta damaged, scutum laterally of prescutellar setae slightly broken).

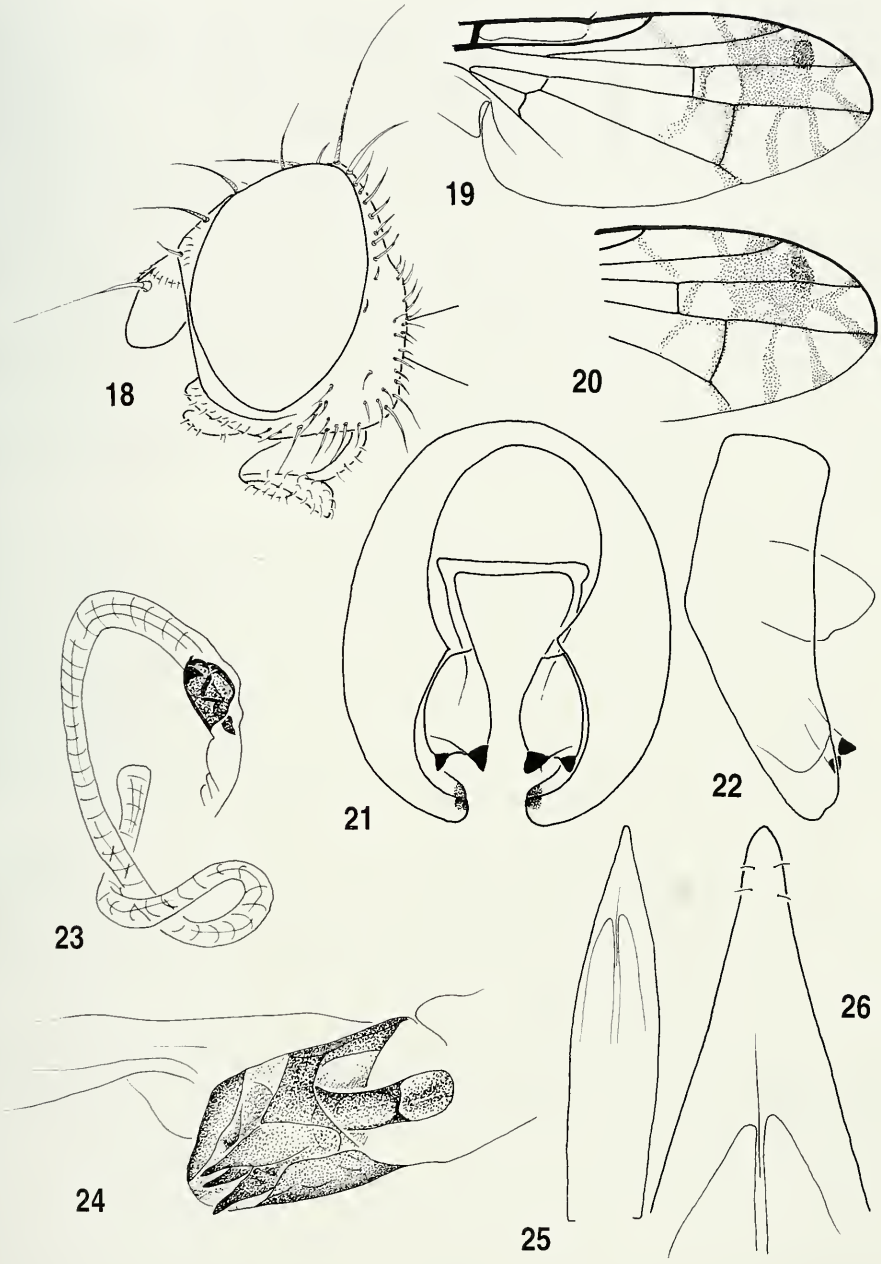
Paratypes: 1♂, 1♀, same data as holotype: 2♂♂, 6♀♀, "OMAN: Dhofar / Hajayf (Euphorbia / zone) 12.X.1990 / J. C. Deeming", "J. C. Deeming / Coll. NMW. / Z. 1981-001"; 1♂, "OMAN: Dhofar / Mughsail Pass / 11.X.1990 / J. C. Deeming / on Castor", "NMW. Z. / 1981-001"; 1♀, "OMAN: Dhofar / Arifr. 1000m / 11.X.1990 / J. C. Deeming" "NMW. Z. / 1981-001" (MHNG, NMW, TAU).

Etymology

The name is derived from the eight rays which emerge from the central dark area on the wing.

Diagnosis

This species may be readily separated from *G. apicalis* only by the wing pattern with the distinctly smaller bulla, the absence of a brown pattern in cell br basally of R-M (Fig. 19), and by the subequal length of the 3 toothlike projections of the glans (Fig. 24).



FIGS 18-26

Goniurellia octoradiata sp. n. 18, head, lateral view; 19-20, two wings, showing variation in pattern; 21, ♂, epandrium and surstylus, caudal view; 22, ♂, epandrium and surstylus, lateral view; 23, ♂, phallus; 24, ♂, details of base of glans, ventral view; 25, ♀, aculeus, ventral view; 26, ♀, tip of aculeus, ventral view.

DESCRIPTION

Wing length. ♂ 2.60-2.70 mm; ♀ 2.45-2.75 mm.

Head (Fig. 18). In profile slightly higher than wide (height:width ratio about 1.25: 1); gena very low, about one eight as high as compound eye; frons almost square, only indistinctly wider at level of ocelli than length from posterior ocelli to lunule; fronto-facial angle slightly larger than 90°; frons bare or with few whitish setulae just posterior of lunule; general colour mat yellow, only ocellar triangle and butterfly-shaped spot on occiput dorsally of occipital foramen dark grey microtrichose; frontal and orbital plates silvery microtrichose; mid-frontal stripe weak, slightly silvery; scape whitish, pedicel brown setulose; postpedicel about 1.5 times as long as wide; arista virtually bare; palpus apically with spiny black setulae, basally whitish setulose; proboscis capitate. Chaetotaxy as in *G. apicalis*, with 2+1 frontal setae, 1+1 orbital setae, 1 white medial postocellar seta and all postocular setae whitish lanceolate.

Thorax. Colour of scutum as in *G. apicalis* mainly bluish grey microtrichose, with 3 dark-grey longitudinal stripes over lines of dorsocentral setae and in middle; dorsocentral seta aligned almost at transverse suture. Chaetotaxy as in *G. apicalis*.

Legs. Uniformly yellow, without modifications.

Wing (Figs 19-20). Veins bare except R_1 dorsally setulose; distance between crossveins 1.5 times longer than length of R-M. Pattern of "narrow-stellate type", similar to *G. apicalis*; eight rays emerge from dark-brown central area: one from pterostigma to R-M, one between two hyaline spots in r_1, two rays apically to tip of veins R_{4+5} and M, respectively, two rays in m, one ray over DM-Cu, and one ray from R-M through dm; cell r_{4+5} in addition to large hyaline spot at base between crossveins either uniformely dark (Fig. 19) or with 1-3 small hyaline spots (Fig. 20); cell br entirely hyaline, rarely with an indistinct brown spot distally which never occupies entire width of cell, as in *G. apicalis*; bulla comparatively narrow, clearly higher than wide.

Abdomen. As in *G. apicalis*.

Male terminalia (Figs 21-24). Epandrium and surstyli as in *G. apicalis*; phallus with unusually short, bare distiphallus barely longer than hypandrium; glans with parallel-sided, long vesica at least 15 times as long as wide; basal sclerotization small, at base with a tubelike sclerotization and apically with three toothlike projections of about the same length.

Female terminalia (Figs 25-26). Oviscape predominantly orange brown, dark brown at base and at tip, dorsally and ventrally in basal half with whitish lanceolate setulae, about as long as preceeding two tergites combined; aculeus evenly pointed at tip, rather narrow; aculeus length: 0.77 mm (1 specimen checked).

BIOLOGY

No hostplants are known for this species.

AFFINITIES

This species is very similar to *G. apicalis* from Sokotra, differing only in characters indicated in the key below and the description above. The male terminalia (epandrium, glans) are very similar, and the only difference seems to be the relative length of the 3 toothlike projections of the glans (subequal in *G. octoradiata*; one tooth clearly longer in *G. apicalis*). The wing characters, however, are very constant and no

intermediate specimens are known. Therefore, the two populations are considered here to belong to two distinct species. Some remarks about the position of this species within *Goniurellia* are given under *G. apicalis*.

MODIFIED KEY FOR SPECIES OF *GONIURELLIA* HENDEL

The following key incorporates the three new species in the key of Freidberg (1980) which is modified as follows:

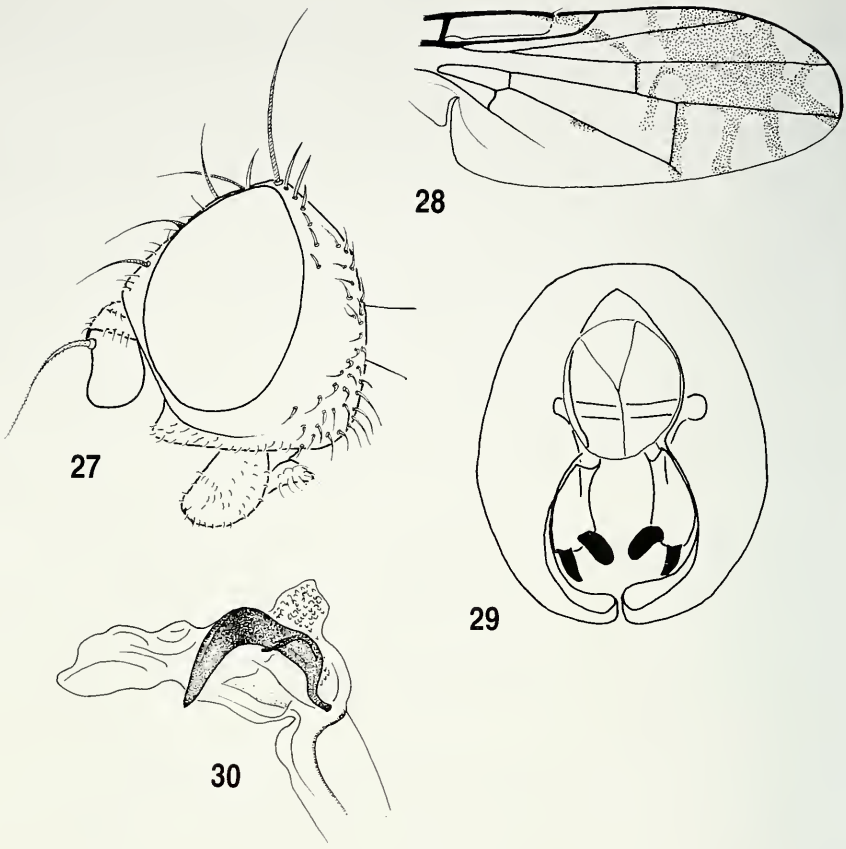
1 Wing with pterostigma hyaline, at most at distal end with narrow dark area (Fig. 2) 1a
\- Pterostigma almost entirely dark coloured, extended in a broad cross-band to R-M (Fig. 11) 1c
1a Wing pattern distinctly reticulate, dark spot in distal half interrupted by at least 3 large hyaline spots; hyaline spot just below tip of R_{2+3} large, fused or only indistnctly separated from subapical hyaline spot (Freidberg & Kugler, 1989: plate IV, Fig. 2). Iran to Egypt (Sinai) . . . . . *G. lacerata* (Becker)
\- Wing with a large dark subapical area (Fig. 19) which is at most interrupted by 1-3 small hyaline spots (Fig. 20); small hyaline spot below tip of R_{2+3} separated by at least its width from subapical hyaline spot 1b
1b Cell br proximad R-M always with at least a pale-brown spot which is as wide as cell (Fig. 2); bulla large, almost as wide as high (Fig. 2); glans with 3 toothlike projections of which one tooth is distinctly longer (Fig. 7). Sokotra . . . . . *G. apicalis* sp. n.
\- Cell br entirely hyaline, at most with isolated brownish spots in distal half, which never cover the entire proximal border of R-M (Figs 19-20); bulla distinctly higher than wide (Figs 19-20); glans with 3 toothlike projections of subequal length (Fig. 24). Oman (Dhofar) . *G. octoradiata* sp. n.
1c Wing (Fig. 10) with only one hyaline spot in r_1 forming almost a regular triangle and reaching at least middle of r_{2+3}; ray from R-M through dm extended to Cu_1; scutum yellowish grey microtrichose with indistinct brown longitudinal stripes; male: preglans area of distiphallus with a row of 6 long, black spines (Fig. 13). Oman (Muscat) . . *G. ebejeri* sp. n.
\- Proximal hyaline spot in r_1 comma like, not forming a regular triangle; r_1 either with one hyaline spot restricted to this cell (*G. persignata*, see Freidberg, 1980: Fig. 8) or with small additional hyaline spot distad (other species, see Freidberg, 1980: Figs 4-7 & 9); scutum usually bluish grey microtrichose with distinct brown, longitudinal stripes; male: distiphallus without spines 2
2 see key of Freidberg (1980) for remaining species

Trupanea cosmia (Schiner, 1868) Figs 27-30

Tephritis cosmia Schiner, 1868: 269.

MATERIAL

Lectotype ♀ (designated by Hardy, 1968): "Novara-R / Madeira", "*cosmia* / Alte Sammlung", "Lectotype ♀", "Lectotype ♀ / *Tephritis* / *cosmia* Schiner / selected by / D. E. Hardy,



FIGS 27-30

Trupanea cosmia (Schiner, 1868): 27, head of ♀ lectotype, lateral view; 28, wing; 29, ♂, epandrium and surstylus, caudal view; 30, ♂, tip of phallus, lateral view.

1961" (NHMW). Paralectotype ♂, "Novara-R / Madeira", "*cosmia* / Alte Sammlung", "252". The paralectotype is accompagnied by 2 permanent slides which are labelled "252 / Tel-Aviv University / Dep. of Zoology / *Trupanea* / *cosmia* Schiner / Madeira / Paralectotype" (NHMW).

ADDITIONAL DESCRIPTION

A detailed description was provided by Schiner (1868) and Hendel (1927) and does not need to be repeated here. However, it can be complemented by the following points: Frons flat, slightly narrower at level of lunula than on level of ocellar triangle; scape with white, pedicel with black setulae; palpus in female strongly spatulate (Fig. 27), but normal in male; 2-3 concolorous frontal setae present, the anteriormost at most half as long as posterior two setae, or missing; medial postocellar seta absent; all postocular setae whitish lanceolate; thorax light ash grey, with indistinct dark-grey stripes over lines of dorsocentral setae and in middle; foretarsi in male broken on available specimen, therefore structure of tarsomeres not visible; wing pattern and venation as in

Fig. 28. R_{4+5} bare on both sides; abdomen densely ash grey microtrichose, covered by whitish, lanceolate setulate; male terminalia as in Figs 29-30. Medial surstylus with medial prensiseta blunt and larger than acute lateral prensiseta; glans of aedeagus with sclerotized hook and short vesica. Female with black oviscape about as long as preceeding two tergites combined, dorsally and ventrally covered for at least three quarter by dense white, lanceolate setulae; aculeus not examined.

Comments

Based on the structure of the glans and the head shape this species clearly belongs to *Trupanea* Schrank as defined by Merz (2000). The limited material examined does not allow to conclude whether the number of frontal setae (only two strong frontal setae present, anteriormost seta either weak and short or absent) is a constant character. Within the Western Palaearctic region this species may be easily separated from the congeneric species by the wing pattern with an apical fork and the presence of a narrow ray from the tip of the pterostigma to R-M.

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REFERENCES

Becker, Th. 1910. Dipteren aus Südarabien und der Insel Sokotra. *Denkschrift der Akademischen Wissenschaften Wien* 71 (2): 131-160.

Freidberg, A. 1980. A revision of the genus *Goniurellia* Hendel (Diptera: Tephritidae). *Journal of the entomological Society of southern Africa* 43 (2): 257-274.

Freidberg, A. & Kugler, J. 1977. The Type-Species of *Goniurellia* Hendel, 1927 (Insecta: Diptera: Tephritidae). Z. N. (s.) 2157. *Bulletin of Zoological Nomenclature* 33 (3-4): 208-210.

Freidberg, A. & Kugler, J. 1989. Diptera: Tephritidae. *Fauna Palaestina, Insecta* IV: 1-212 & IX plates.

Hardy, D. E. 1968. The Fruit Fly Types in the Naturhistorisches Museum Wien (Tephritidae-Diptera). *Annalen des Naturhistorischen Museums Wien* 72: 107-155.

Hendel, F. 1927. 49. Trypetidae. *In*: Lindner, E. (ed.). *Die Fliegen der Palaearktischen Region*, Vol. V: 1-221 & 17 plages.

Hering, E. M. 1956. Bohrfliegen von Iran 1954 (Dipt., Trypetidae) (51. Beitrag zur Kenntnis der Trypetidae). *Jahreshefte des Vereines für Vaterland und Naturkunde Württemberg* 111: 82-89.

ICZN, 1982. Opinion 1208. *Goniurellia* Hendel, 1927 (Insecta, Diptera): Designation of Type Species. *Bulletin of Zoological Nomenclature* 39 (2): 109-110.

Merz, B. 2000. 24. Phylogeny of the Palearctic and Afrotropical Genera of the *Tephritis* Group (Tephritinae: Tephritini) (pp. 629-669). *In*: Aluja, M. & Norrbom, A. L. (eds). Fruit Flies (Tephritidae): Phylogeny and Evolution of Behaviour. 944 pp. *CRC Press, Boca Raton, London, New York, Washington D. C.*

Norrbom, A. L., Carroll, L. E., Thompson, F. C., White, I. M. & Freidberg, A. 1998. Systematic Database of Names (pp. 65-299). *In*: Thompson, F. C. (ed.). Fruit Fly Expert Identification System and Systematic Information Database. *Myia* 9: 1-524.

Schiner, J. R. 1868. Diptera (pp. 3-338). *In*: Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B. von Wüllerstorf-Urbair. Zoologischer Theil. Zweiter Band. 1. Abtheilung [Section] B. *Kaiserlich-Königliche Hof- und Staatsdruckerei Wien*. VI & 388 pp. & 4 plates.

Stuckenberg, B. R. 1999. Antennal evolution in the Brachyera (Diptera), with a reassessment of terminology relating to the flagellum. *Studia Dipterologica* 6 (1): 33-48.

White, I. M., Headrick, D. H., Norrbom, A. L. & Carroll, L. E. 2000. 33. Glossary (pp. 881-924). *In*: Aluja, M. & Norrbom, A. L. (eds). Fruit Flies (Tephritidae): Phylogeny and Evolution of Behaviour. 944 pp. *CRC Press, Boca Raton, London, New York, Washington D. C.*